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Worldwide Report

NUCLEAR DEVELOPMENT AND PROLIFERATION

No. 182

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WORLDWIDE REPORT

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VIRTUALLY ALL SOVIET NUCLEAR EXPERTS RETURN FROM FINLAND

Helsinki HELSINGIN SANOMAT in Finnish 27 Feb 83 p 3

[Article: "Soviets Leave Nuclear Plant Barrack Village"]

[Text] Lovisa--The barrack facilities in the vicinity of the Lovisa Nuclear Power Plant have at least for the time being been vacated by their Soviet residents. At one time there were nearly 1000 Soviet nuclear plant construction workers living in the village built in the years 1970--75.

Now only two men are left to guard the barracks of the plant's Soviet supplier, Atomenergoeksport. The barracks, which are being vacated, at one time contained a school, library, doctor's office, movie theater, dining room, and post office.

The Soviets are taking one of the barracks with them, a canteen. It also housed a store. The barrack was disassembled for loading on to a train last Friday.

Finnish workers also lived together with the Soviet barracks community in the same area. The largest number of residents in the area at one time was a little less than 2000 people.

Engineer Leonid Prokopenko has lived in the barracks village for a year. He will remain to guard the property belonging to Atomenergoeksport for possible future use.

According to Prokopenko, the Soviets got along well in the area and were comfortable in the buildings made by the Finns.

"Many of the workers had their families with them. The largest facilities had three rooms, and they were suitable for families with children. There was a school for the children and at one time there were four grades."

During their free time the residents of the area went fishing and gathered berries and mushrooms. The walls of many of the barracks are still decorated with fishing poles. At that time when people were still living in the area, a fish drying near the barracks was a common sight.

Free Movies As Entertainment

The favorite pastime was the movies. The local movie theater presented programs from Saturday through Monday and on Wednesdays. This entertainment was free, and even Finns were seen watching films in the 200-seat theater as well as playing billiards at the "club".

Finnish-Soviet athletic events played in the spirit of mutual understanding were also among the forms of entertainment.

However, contacts between the Soviet and Finnish residents of the barracks village remained official the whole time. Attesting to this is the fact that there was not one single romance crossing national borders. At least Leonid Prokopenko was not aware of any such developments.

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CSO: 5100/2582

U.S. NUCLEAR NON-PROLIFERATION POLICY EXAMINED

Tokyo GENSHIRYOKU KOGYO [NUCLEAR ENGINEERING] in Japanese Dec 82 pp 65-71

[Article by Kumao KANEKO, Chief Researcher at the Japan International Problems Research Institute and former Director of the Nuclear Energy Division of the Foreign Ministry]

[Text] US President REAGAN emphasized, in his statement on July 16 last year, that the US must liquidate former President CARTER's nuclear non-proliferation policy, and recover, in the future, its position as a "reliable partner" in international nuclear energy relations. One year and several months after that, full-scale nuclear energy negotiations are under way between the Governments of Japan and the US. However, it seems that the ways of responses by the US side are not quite clear. We can fully understand that the Administration side, centering on the Department of State and the White House, is trying to make responses as realistically and flexibly as possible. However, nothing can be done only with the intention of the Administration, and herein lies the difficulty of the process for policy decisions, which process may be represented by the present democracy of the American type. The criticism of the Government by the group of nuclear non-proliferation members of the US Congress, including GLENN, BINGHAM, and CRANSTON, has recently become more active than ever. They are asserting that the "1978 Nuclear Non-Proliferation Act" should be strengthened further, far from being eased. Thus, the future admits of no optimism.

The persons connected with nuclear energy in Japan have not yet fully got rid of the attitude of not viewing problems except from the view-point of energy, like at the time of the negotiations on Tokai re-processing five years ago. However, the US side, especially Congressional sources, views them from two fields--energy and security. It goes without saying that this is due to the historical circumstances where nuclear energy started in the US as nuclear weapons first, rather than as peaceful uses. It cannot be said that there is no fear that the "nuclear energy friction" between Japan and the US will reach the ignition point again, if we shut our eyes to the under-current of such a traditional nuclear non-proliferation policy in the US, and continue to lend our ears only to information which is favorable for Japan for the time being.

This time, therefore, I want to review the moves of the US nuclear non-proliferation policies under the REAGAN Administration during the past two years

mainly in the background of relations of confrontation between the Administration and the Congress, and make it a means of correctly viewing the Japan-US nuclear energy negotiations in the future. Incidentally, I add, by way of precaution, that the parts covering opinions in this article are entirely my personal opinions.

Appearance of REAGAN New Administration and Optimistic Mood

Just two years ago, when REAGAN won the Presidential election, the persons connected with nuclear energy in various countries, including Japan, were greatly delighted. Unlike former President CARTER, who appeared with a review of nuclear energy development itself and the strengthening of the nuclear non-proliferation policy as his public promises in the election, and acted generally in accordance with the public promises for four years after that, REAGAN clearly showed the posture of attaching importance to nuclear energy from the time of the Presidential election, and at the same time gave the impression, both at home and abroad, that he has such a "realistic" way of thinking about nuclear non-proliferation, too, that he carelessly blurted out that "I do not think that it is a very big problem." The report compiled by the power-shift team in accordance with this idea from late 1980 to early 1981 included many such drastic concepts as to change completely the policies in the CARTER age, for the most part. Persons in charge of nuclear energy relations in the Department of State, the Department of Energy, the White House, etc., were replaced by those who were regarded as favoring nuclear energy. Furthermore, there was even the persistent wishful thinking that the 1978 Nuclear Non-Proliferation Act, which was enacted under the preceding Administration, will be revised in the not distant future in the direction of being eased.

Such moves in Washington were communicated to Japan after being amplified to a certain extent, as usual. As a result, an optimistic mood was promoted to the effect that there is no need for worry because Japan and the US will no longer confront each other over the problem of operation of the Tokai Re-Processing Plant, and because the permission (MB #10) for moving spent nuclear fuel to Britain and France will be dealt with "in a lump" in the future.

In regard to the Tokai Plant, there were prospects that the initial amount of re-processing--99 tons--will be attained with January, 1981, and therefore, Japan and the US continued negotiations until the day before President CARTER left the White House. As a result, agreement was reached on the line of adding 50 tons and also extending the period to the end of June, 1981 (thereafter, it was further extended to October). As regards the series of problems after that, President CARTER chose the way of leaving the matter to the judgment of the new Administration, for the reason that there is the possibility of its being settled under the REAGAN Administration more favorably for Japan.

The new Administration was started in such a situation, and it was expected that a new policy will be announced even at once. However, it was not likely that it would be announced, though the Japanese side waited and waited. The Japanese side wanted to start immediately full-scale negotiations to settle at one shot the problems pending between Japan and the US, taking the conclusion of INFCE (International Nuclear Fuel Cycle Evaluation) also into account, if

the new US policy is announced. Therefore, Prime Minister SUZUKI, who visited the US during Golden Week in May, strongly proposed to President REAGAN that full-scale Japan-US negotiations be opened at an early date. This resulted in Paragraph 14 of the statement dated May 8, to the following effect: "The Governments of Japan and the US will promptly start consultations for a permanent settlement, at the earliest possible date, of the various problems concerning nuclear energy, which are pending between the two nations."

This paragraph, which was included with the intention of pushing the US side, was reversely greatly welcomed in Japan, and the optimistic mood mounted further, with the Japanese side relieved at the fact that it had obtained the promise of President REAGAN himself. (Incidentally, although the English text of the Joint Communiqué read as if there was emphasis on the point that the administrative officials of the two sides will "promptly start consultations," the Japanese text gave greater emphasis, on account of the grammatical word order, to the part, "for a permanent settlement at an early date." Now this writer is self-reflecting that it can be said that this gave rise to a delicate difference in the way of thinking between Japan and the US, and became a cause of complicating more than necessary the negotiations between the two sides thereafter over the preparation of the Joint Decision and Joint Communiqué dated October 30 in the same year.)

After-Effects of Israel's Bombing Attack on Iraqi Nuclear Reactor

In this situation, the operation to formulate the REAGAN Administration's new nuclear non-proliferation policy was pushed steadily, though at a slow tempo, and it was arranged that the policy will be made public soon after the SUZUKI visit to the US. After that, however, the policy paper partially leaked to the Washington Post, etc., and this became a problem. Thus, things had slow going. Just at that time, a big incident--the Israeli Air Force's bombing attack on an Iraqi nuclear energy facility--occurred suddenly in early June.

In Japan, too, the then Foreign Minister SONODA strongly criticized this incident, saying that it is a "reckless act" which will worsen Israel-Arab relations. Actually, the bad effects of this incident were immeasurable in the sense that it dealt a big blow not only to the field of international politics of the Middle East but also to the field of nuclear energy, especially to the International Atomic Energy Agency's (IAEA) inspection and safeguards systems themselves.

What I thought intuitively the instant I heard the news of the incident was that the Japan-US nuclear energy negotiations, for which careful arrangements were made by taking a long time, may suddenly become difficult to carry out because of the incident. Unfortunately, my pre-sentiment came true. Two weeks after the bombing attack incident, the effectiveness of the IAEA's inspection and safeguards systems came into question in the US Senate. An American, who is said to have resigned the post of IAEA Inspector several days before, took the witness stand and severely criticized the IAEA's inspection activities, as if in terms of an internal charge.

Senator GLENN, who is one of those who contributed to the creation of the 1978 Nuclear Non-Proliferation Act, also admitted the said Act's going too far, from about the fall of 1980, and leaned toward the idea that a partial revision thereof is unavoidable. However, with this incident of the bombing attack on the Iraqi nuclear facility as an occasion, he began to emphasize again the importance of the nuclear non-proliferation policy. Such Congressmen as CRANSTON, BINGHAM, HART, and OTTINGER also responded to this. These advocates of nuclear non-proliferation said that the Nuclear Non-Proliferation Act should rather be strengthened, and they unanimously delivered pre-emptory attacks against the REAGAN Administration, which was planning to ease the application of this Act. The persons in charge, facing such a sudden change in the situation, became compelled to revise drastically, without delay, the Presidential statement which had generally been completed by that time and only waited to be made public.

Therefore, in the "US Presidential Statement Concerning Nuclear Non-Proliferation and Co-operation in Peaceful Uses of Nuclear Energy," which was made public on July 16, very cautious expressions, which are not quite frank, are used here and there, reflecting the above-mentioned circumstances. Of course, the stand of attaching importance to nuclear energy runs through the Statement, on the whole. In regard to foreign relations, it frankly admits that "Recently, the various nations allied with the US have lost their trust in the US." Thereupon, it says that "We must re-establish the US as a predictable and reliable partner in co-operation as to nuclear energy." As a concrete method for this, it first divides countries into (1) "various nations having high-level nuclear energy plans, without any risks of nuclear proliferation"--"the allied nations"--and (2) "various other nations." Thus, the basic line of easing the restrictions on the former as far as possible is made very clear. Compared with the fact that former President CARTER, who stipulated nuclear energy as the "last resort" and uniformly adopted the policy of denial toward all foreign countries, in principle, this should be viewed as a big step forward, after all.

However, when the Statement is read more minutely, it is found that (1) as to international co-operation with the "countries allied" with the US in regard to nuclear energy, the condition, "under sufficient safeguards," is specified at important points, that (2) toward the countries belonging to the first category in the above, it says only that "commercial re-processing and the development of fast breeder reactors will not be inhibited or restrained," and does not say that re-processing and the development of fast breeder reactors will be approved in a positive way, and that (3) in regard to application for exports and for permission, based on the nuclear energy agreements with various nations, it says that "prompt measures will be taken," but does not forget to attach the condition, "in cases where statutory requirements are met." It goes without saying that the "statutory requirements" mean the requirements under US national laws, namely, the 1954 Nuclear Energy Act and the 1978 Nuclear Non-Proliferation Act, and that to what extent of application the requirements are to be met is left entirely to the judgment of the US itself.

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time, as I mentioned the time before last (October issue). In other words, this is an application for permission on a case-by-case basis. The application by the electric power company concerned is presented to the US Government through the Japanese Government (Foreign Ministry through MITI and the Science and Technology Agency), after the Japanese Embassy in the US obtains the approval of the EC Mission (in the US). In the US Government, some Departments and Agencies, including the Department of State, the Department of Energy, the Department of Defense, and the Arms Control and Disarmament Agency (ACDA), hold consultations and judge whether or not to approve the application for permission. In this process, the approval of the Nuclear Regulatory Commission (NRC) is to be sought. However, if there arise any questionable points connected with the application before that time, the Japanese side will be asked about them each time. After the consent of the Departments and Agencies concerned is obtained, a decision is to be made to the effect of approving the application, under the name of the Office Director in charge in the Department of Energy, through a decision by the White House.

Generally speaking, these are sufficient as the procedures to be taken within the Government, and a report on permission ought to be made to the Japanese side immediately. Actually, however, this is not the case. The problem comes after that.

The above-mentioned decision by the Office Director in charge in the Department of Energy is carried in the Federal Official Gazette, and is presented to the Congress for 15 days. These 15 days do not include national holidays and the like, and when the Congress is adjourned, the days of the adjournment are added, as a matter of course. If a House member or a Senator calls the permission (MB #10) into question during this period, Administration officials are summoned, or a public hearing is held, depending upon circumstances. The above-mentioned decision does not come into effect during this period, in principle. Therefore, even when a transport ship for Britain or France is at anchor at a Japanese port, it is impossible for the ship to be loaded with spent nuclear fuel.

Fortunately, MB #10 permission for Japan has not presented any particular problem in the Congress during the past several years, excluding the period of about one year after the enactment of the Nuclear Non-Proliferation Act. Therefore, no actual harm has arisen. As a possibility, however, the Congress may intervene at any moment, and if it does, it will be impossible to do anything about it. Of course, even the Congress is unable to upset the Administration's decision easily. For this purpose, it is necessary for both the House of Representatives and the Senate to adopt a resolution for disapproval unanimously. It is not conceivable that such a situation will take place often. At least as a general rule, however, the Congress is supposed to review the decision by the Administration each time, and the matter does not come to the end of the chapter before this is over (even when agreement was reached between the Governments of the two countries a long time before). During this period, the persons concerned are placed in an extremely awkward and uneasy situation for as long as several months, depending upon circumstances. As various countries criticized the US very severely in connection with INFCE, this is certainly

an "unpredictable" situation, and it is very annoying for the Government and enterprises of the other country.

The foregoing is a comparatively simple case in terms of MB #10. However, like in the case of the joint decision at the time the amount of re-processing at the Tokai Plant was increased by 50 tons in January last year, and the case of the joint decision dated October 30 last year, it is obligatory, under the Nuclear Non-Proliferation Act, to go through a similar process also as to what has been discussed so minutely between the Governments of the two nations and reached actual agreement.

The structure in which the Congress thus participates even in the negotiation of individual cases -- "subsequent arrangements" mentioned in the Nuclear Non-Proliferation Act -- based on the Nuclear Energy Agreement (Treaty), which the Congress itself approved, clearly goes too far, from the common idea of us Japanese. However, it seems that in the US recently, the Congress has generally come to check into the acts of the Administration each time trouble arises, especially since the Vietnam War and the Watergate Case. It can be said that this proves that the US Congress is attaching much importance to nuclear energy diplomacy and the problem of nuclear proliferation, aside from whether such a practice is proper or not.

Actually, the arguments in the US House of Representatives and Senate on the problem of nuclear proliferation have surprisingly substantial contents and quality, which are incomparable with those in Japan. In the Diet of Japan, it is seldom that the problem of nuclear proliferation is discussed on the Foreign Affairs Committee level, in both the Upper and Lower Houses, aside from the Science and Technology Committee level, except in cases connected with the ratification of the Nuclear Energy Agreement once in several years. In the case of the US Congress, however, this problem is discussed at the Foreign Affairs and Foreign Relations Committees of the House of Representatives and the Senate, very frequently and in great depth. In addition to Congressmen GLENN, BINGHAM, HART, and CRANSTON, who have already been introduced often, big-name Congressmen who are well known in Japan, too, participate in such arguments. Not only arguments among Congressmen but also discussions are held frequently, with experts in various circles invited. Legislation by House members and Senators is also active. (This is possible because, for one thing, various Congressmen have many superior young experts -- some of them being driven by ambition -- as staff members. It is said that some of them are concentrating the outline of their eagerness, which they once directed toward opposition to the Vietnam War and the environment problem, in opposition to nuclear power plants and in nuclear non-proliferation. It seems that some of them are fairly dramatic and ambitious by nature, and have great influence.)

Bills on Strengthening the Nuclear Non-Proliferation Act Presented April 24, 1977

It is true, with regard to the possible attack on the Japanese nuclear energy facility in the 1960s, and also, since the interest of the US Congress in the nuclear proliferation problem has been increasing, that at the time the CARTER

Administration was inaugurated. During the past year, at least five or six bills to revise the Nuclear Non-Proliferation Act have been presented. They are all legislation by House members or Senators, and, moreover, their contents are designed to make the Nuclear Non-Proliferation Act severer.

Among them, (1) the BINGHAM Bill (H.R. 6032) and (2) the HART-CRANSTON-OTTINGER Bill (H.R. 6318) are attracting special attention recently. The contents of these Bills are briefly introduced as follows:

The former is aimed at the following points: (1) Strengthening the restrictions on the moving of nuclear energy technology; (2) strengthening the restrictions on the export of highly enriched uranium; (3) expanding the participation of the Congress on the occasion of issuing a prior agreement (extending the above-mentioned "15 days" to "30 days," for example); and (4) expanding the participation of the Department of Defense.

On the other hand, the latter is intended for the following: (1) Banning export from the US of facilities and technology concerning re-processing, enrichment, and production of heavy water; (2) strengthening the restrictions on the re-processing of US-produced nuclear fuel and on the moving and use of recovered plutonium; (3) strengthening the restrictions on the export of nuclear energy materials and technology; and (4) strengthening the IAEA safeguards.

Over these two Bills, public hearings have often been held in the House and Senate during the past several years. Each time, not only persons connected with the Government, including Under-Secretary of State KENNEDY and Deputy Secretary of Energy DAVIS, but also many veteran experts, such as SCHEINMAN (Professor at Cornell University; took charge of the negotiations in 1977), who is very friendly with Japan, too, DOVE, and MUNTZING (both are lawyers specializing in nuclear energy), were required to speak as witnesses. Many of these witnesses naturally warned against a hasty revision of the Nuclear Non-Proliferation Act, and clarified a stand critical of the above-mentioned two Bills. However, the Congressmen's side is severely criticizing the above-mentioned new policy of the REAGAN Administration concerning re-processing and use of plutonium, and unanimously emphasizing the necessity for a bill to strengthen the said Act. Congressman GLENN (Democratic Senator; elected from Ohio), who is said to have become somewhat compromising recently in connection with his expected running in the Presidential election in 1984, said in effect as follows on September 9:

"...The REAGAN Administration made serious concessions under the name of a nuclear non-proliferation policy, and, moreover, it is thought that there is nothing to be obtained from foreign countries as collateral for this. ... I believe that the long-term, package approval (program formula) for re-processing and for the use of plutonium, which approval the said Administration has proposed, is against the Nuclear Non-Proliferation Act. In the light of the wording in the said Act and the process of its establishment, it is clear that the Congress was well aware of the customary practice of many years' standing that the subsequent arrangements are examined on a case-by-case basis. One of the main points which the Congress aimed at under the Act lay in drawing out to a

public place the process of approving each case, which has been dealt with behind the scenes for a long time, by openly justifying the subsequent arrangements for each case and exposing it to the Congress for 15 days. If the US gives long-term package approval, which will possibly continue for tens of years, as proposed by the REAGAN Administration, such a supervisory function of the Congress will be enasulated."

What should be further noted as to the BLENN statement is that he invariably stipulates the re-processing/plutonium line as "dangerous and expensive," and firmly maintains the stand that since safer and more inexpensive substitutes are ready for use for tens of years, the US should not follow the re-processing/plutonium line. A similar stand is announced extremely strongly at the outset of the OTTINGER Bill, too, for example. It says definitely as follows: "As to re-processing and use of plutonium and highly enriched uranium, it is impossible to carry it out under such conditions as to give the US a definite promise of timely waiting."

2.2.2 "Reliable Partner"

And, these statements by various Congressmen, representatives on the Government side, such as Deputy Secretary DAVIS and Under-Secretary KENNEDY (and recently been appointed Ambassador in charge of Nuclear Non-Proliferation), point out that the US is no longer a monopolistic exporting country in the world like in the past, and that many countries are already carrying out their re-processing plans. Thus, they are patiently developing the assertion that approving the use of plutonium in Japan and the various Euratom nations at this stage is a "reliable partner" for the US to maintain its power of influence in the world nuclear energy field.

On the other hand, the Congress side stated that it is impossible to pass through the Congress the above-mentioned two Bills in their original forms, which are all too long, in the light of the mid-term elections on November 2, 1980. The Congress must proceed with the elections. Thus, it is necessary to revise the Nuclear Non-Proliferation Policy Bill, with the two other bills, the Atomic Energy Act and the Energy Research and Development Act, which are now being considered by the House Foreign Affairs Committee's subcommittee on Energy and the Environment, which is holding hearings on September 15.

One of the points mentioned in the new bill is the point that a "systematic approval for re-processing" has been established. This means that the US can give its approval to foreign countries for re-processing if it is included in a new co-operative agreement with them. Therefore, if the bill is passed, the US will be able to give its approval prior approval under the program for re-processing. This is a significant change in the agreement by revising the existing agreement with the IAEA.

On the other hand, it is noted in the new bill (Section 147) that it is necessary to provide the Congress with this new Bill in the Congress in the future, and that the bill will be some peaks. Congressman BINGHAM, who is the sponsor of the said Bill, will not run it.

the mid-term elections on November 2, and he is scheduled to retire, with this term as the last. Therefore, an informed source has the prospect that it is fully possible for the Bill to be passed at the House Foreign Affairs Committee, in the sense of adorning the last days of his career. (The Democratic Party originally holds a majority in the House of Representatives.) However, how the Senate Foreign Relations Committee, where the Republican Party holds a majority, though by a slight margin, will handle this will be swayed also by the results of the mid-term elections. There is the view that these bills were presented by the nuclear non-proliferation faction to restrain the REAGAN Administration, rather than with the prospect that it will be possible to pass them. In any case, it is utterly difficult to predict the consequence in the future. Of course, we can understand the painstaking efforts of the persons concerned in Japan, who must push difficult negotiations with the US, while fully noting the trends of the whimsical Congress under such a situation. However, the difficult position of the persons in charge of negotiations on the US side, who are felt to be "attacked both in front and rear," is also worthy of sympathy.

As former Under-Secretary KENNEDY aptly pointed out, the US now supplies only 35 percent of the enrichment market of the world (excluding the communist bloc). Even if the US shows a bold front, it will be unable to do so forever. (It is well known that Australia and Canada have already agreed with major nations, including Japan, on long-term package approval under the program formula.) At this time, is it not rather desirable for the US and also for the world that the US show realistic responses to Japan and the Euratom nations where there is no fear of nuclear proliferation, thereby, recover its position as a "reliable partner" in nuclear energy relations with these various nations, and build a foundation for preventing nuclear proliferation on a global basis, that is, for taking joint measures toward the areas where such fear truly exists?

Japan also should outgrow, about this time, the narrow-minded idea that the affairs of other countries will matter little if its own problems are settled satisfactorily, and firmly acquire a posture for seriously considering what Japan can and should do for the prevention of nuclear proliferation on a global basis. This is because establishing the position of a "reliable partner" in relations with friendly nations, including the US, is indispensable for the security of Japan itself, too.

As to what Japan should and can do concretely, I want to consider thoroughly with you readers, from the next issue on.

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DEVELOPMENT OF UNDERGROUND NUCLEAR WASTE DUMPS DESCRIBED

KARTAN KWARTALNIK GEOLOGICZNY I P. 1983, 2, Apr-Jun 83 pp 443-450

[Article by Bohdan Niekiszewicz, Research and Development Center of the Mining of Chemical Raw Materials, Krakow. Lawendow 4: "Geological Conditions for Construction of Underground Radioactive Waste Dumps"]

[Text] The state of the art in the development of the storage of nuclear waste in deep geological formations is discussed. The concept for deep storage of nuclear waste in Poland is presented. Two locations are considered: one in the Zechstein rock salt deposits in the north of Poland and the other in the Archaic and Lower Paleozoic crystalline basement in eastern Poland. The importance of safety analysis when selecting the rock environment for insulating the nuclear waste from the biosphere is stressed. Particular attention is called to the need of a detailed exploration of water environment as a basic element of storage safety.

Introduction

The development of nuclear power production in the world necessitates safe management of the increasing amounts of radioactive waste. The bulk of this waste comes from the operation of nuclear power plants, the balance being produced by factories and laboratories utilizing fissionable materials. Nuclear waste is normally categorized into types with low, medium and high radioactivity, as well as spent nuclear fuel. In terms of storage safety, the low and medium activity wastes can be subdivided into materials that emit or do not emit alpha radiation (Gizal et al., 1980). Low and medium activity waste that does not emit alpha radiation comes mainly from purification plants of spent reactors; this is the so-called reactor waste. A certain minor amount of waste not emitting alpha radiation is created during reprocessing of radioactive effluents originating from various installations and laboratories. The low activity waste is sealed in concrete blocks, the waste is placed in surface storage tanks or in dump pits. In some nations, this kind of waste is stored in abandoned mines. Examples of surface or near-surface storage include the dump at Maxey Flats, Oak Ridge, West Valley and Los Alamos (United States), Orford (Great Britain) and La

Manche (CSM, France). In some countries (such as in the United States and West Germany), worked out and abandoned rock salt mines are used to store waste of low and medium radioactivity (Brandstetter & Harwell, 1979).

In addition to surface storage, which is regarded as a provisional arrangement, a part of the waste is dumped on the ocean floor. This is done under international control (IAEA) in accordance with the London Conventions of 1961 and 1972 (Site Selection Factors..., 1977).

The low and medium activity waste not emitting alpha radiation is likely to create serious technical problems in the future because of the mass scale of its production. For this reason, in many nations attempts are made to decrease the amount of this waste or to limit the concentration of noxious nuclides in it. Work is under way to reduce to a minimum the hazard to the biosphere during the course of disposal.

The sites of storage of reactor wastes, which emit only beta and gamma radiation, must ensure complete safety for human living environments from irradiation for a period of from tens to hundreds of years. The decay period of the critical nuclides of reactor waste (Sr-90 and Cs-137) are on the order of 30 years.

The low and medium activity waste emitting alpha radiation is mainly created during reprocessing of spent nuclear fuel. A certain amount of this waste accumulates also during the production of new elements or in some laboratory work. The wastes contaminated by elements emitting alpha radiation differ from those which emit only beta and gamma rays in the scale of time during which they must be safely insulated. Besides, currently, they are produced in minor amounts. This kind of waste, as well as highly active waste, must be carefully insulated from the biosphere for thousands of years. They contain long-lived emitters of alpha radiation, primarily isotopes of plutonium and other agents.

Most hazardous for the environment is the spent nuclear fuel and high-activity waste. The nuclear fuel discharged from the reactor contains considerable amounts of uranium 235, a number of plutonium isotopes, as well as an entire series of critical transuranium elements. Highly active waste from reprocessing of spent fuel contains the same agents, or minor amounts of uranium or plutonium that reprocessing failed to remove. Spent fuel, as well as highly active waste, because of large amounts of heat, has to be kept during the first period of storage (up to 10 years) in appropriately cooled intermediate surface storage sites. It is only after the heat power of the waste is reduced to a certain level that it can be transported to the site of long-term isolation. In the case of disposal of spent nuclear fuel, packs of fuel rods will be placed in special cylindrical steel or copper containers, whereas highly active waste is melted with boron-silicon glass and located in stainless steel cells.

convened an international group of experts to develop a geological instruction for safe storage of waste in these geological formations. The author's participation in the work of this group enabled him to present, in its current version, partial conclusions from these studies (Site investigation for..., 1980).

When selecting and determining the occurrence areas of rocks suitable for long-term insulation of waste and in designing the underground installations, the common concept currently accepted is that of a barrier protection of waste. The basic barrier is conceived as a rock medium with optimum geometrical, lithological, structural, hydrogeological and physicomachanical parameters. The choice of site should insure as much as possible against the penetration of ground water into the area of waste storage and to minimize the possibility of nuclide leaching. The other, anthropogenetic barriers consist of combining the waste with leaching-resistant materials, placing them in strong corrosion-resistant containers and storage of containers in waterproof and nuclide-absorbent casings.

Bed deposits of rock salt, crystalline rocks such as granitoids and waterproof argillaceous formations are considered most suitable rock environments for underground storage.

The Safety Problem in Polish Concepts of Underground Storage of Nuclear Waste

The initial concept of deep storage adopted for the Polish program of nuclear waste disposal envisages the creation of an underground installation linked to a deep mine excavation in a chamber-pillar system. It will be connected with the surface by a number of vertical shafts. The storage is planned to be used for long-term insulation from the biosphere of low, medium and high activity waste produced by nuclear power engineering in Poland through the fourth decade of the 21st century. The capacity for the production of spent nuclear fuel, after 50 years of continuous operation, has been estimated at approximately 5.4 million m³ (Wierzbich, 1979).

Exploratory work allowed tentative selection of areas of possible location of the dumps. These include: Zechstein rock salt deposits in the Leba area, Archai and Lower Paleozoic crystalline basement of the Podlaskie depression, Early Paleozoic and Eocambrian shales and mudstones of the fore-Carpathian depression and the upper-red marl claystone from the area of the fore-Sudetan monocline (Duchnowski, 1980; Tatka, 1979; Wielubowicz, 1980). The selected areas are characterized by appropriate lithology, a relatively quiet tectonic regime and sufficiently large extent and sufficient thickness and uniformity of the rock complexes. By further elimination, three regions in the eastern Pomorie and two in the Bialostok area have been identified.

In the Pomorie region, the dumps can be located in the rock salt beds. We have to deal here with a Zechstein salt deposit, 130-200 m thick, situated at a depth of 700-830 m. It is planned that the one-level dump of nuclear waste (including high-activity waste) will be made in the near-

As shown in Table 1, the water quality in the river is poor. The water is not suitable for drinking. The water is not suitable for irrigation. The water is not suitable for industrial use. The water is not suitable for domestic use. The water is not suitable for any other use.

...difficult to identify ... liberation of ... This may give ... after had in area where ... The most likely path of ... construction of mine support ... The ... The deep may ... insulating ... effects of the tem- ... structures.

selection of optimum technological parameters of the storage installation and optimum solutions concerning the safety barriers.

Evaluation of Safe Disposal of Nuclear Waste

Evaluation of the safety conditions is mandatory for defining the proper future operation of the dump regardless of the site selected for its location. Human safety should be the basic factor in implementing the individual phases of dump construction, from choice of the site to mining and construction work to final sealing.

The determination of the conditions for safe disposal requires conducting a series of studies both of a general and detailed nature. While general studies are important when deciding on the location of the dump, detailed investigations will be imperative for each of the subsequent stages of work. The basic principle here will be evaluation and identification of the phenomena likely to lead to release of radionuclides from the storage site and their migration through the geosphere and biosphere to the environment inhabited by man.

A number of factors and events may lead to disruptions of the planned insulation of waste. Some of these may result from the effects of individual accidental events, but the majority will result from influences of a number of factors. These include:

- effects of natural processes and events such as groundwater flows, erosion, tectonic phenomena, etc.;
- effects produced by human activities such as changes in water conditions, underground mining excavations, drilling, etc.; and
- interactions between the waste and the surrounding rocks such as thermo-mechanical, chemical, radiological and other phenomena.

Since underground disposal of nuclear waste has no precedent, we lack any actual physical possibility for empiric evaluation of long-term efficacy of this type of biosphere protection from radioactive contamination. It is believed that a most efficient method for control is modeling the process of storage. Simulation results should be correlated with new data of research and observation. Besides, the adopted safety criteria should be constantly tested against the results of such correlation.

Safety estimates should be at the foreground at each phase of implementation of the waste disposal program. Permission for proceeding with each subsequent stage of work should be based on such analyses. The modeling results should be monitored by the agency responsible for the waste storage safety.

Data obtained during the course of selection of areas and sites suitable for the building of a waste dump should be considered particularly important for conducting an adequate safety analysis. After partially completing this stage, one should bear in mind that correct selection of storage site

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are analyzed. The degree to which a given site is assessed and compared with the acceptable standards. If the results are acceptable, the analysis is considered as satisfactory. Otherwise, new evaluations are initiated with changed size or position or characteristics of the nuclear waste stored. A series of mathematical models are applied in considering the various mechanisms of migration of the radionuclides. These models can be general or specific. The former are based on the overall knowledge of the system and the latter are based on the primary exploration of the selected areas of sites. The scientific models, on the other hand, take into account the particular characteristics of the location selected. They are normally based on the results of in-situ and laboratory explorations and chamber work.

It should be emphasized that the main goal of safety analysis of underground storage of nuclear waste is a reliable demonstration that a site built on the selected site will meet all the safety criteria set by the competent control agencies and that the safety barriers that are used, as well as their controls, cannot be disrupted for thousands of years by natural phenomena or processes, or effects caused by deliberate or accidental human interference.

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ARGENTINA

ATOMIC ENERGY CHAIRMAN TO BRIEF BIGNONE

PY281341 Buenos Aires Domestic Service in Spanish 1030 GMT 28 Feb 83

[Text] During the week President Bignone is scheduled to meet with the chairman of the National Atomic Energy Commission, [CNEA], Vice Admiral Castro Madero, who has just returned from Vienna, and will brief the president about this trip.

Admiral Castro Madero has made some important statements. He reasserted that the use of nuclear submarines against any country, such as Argentina, goes against the policies of all those countries, like ours, that are promoting the nonproliferation of nuclear weapons. He said, however, that this is more a moral than a legal principle.

Answering a question whether Great Britain would be sanctioned for (using) nuclear weapons in the Malvinas, Castro Madero noted that he believes that the five powers that have the privilege of using nuclear weapons do not violate any rules since these rules have been drafted in keeping with their needs. Therefore, there will not be any reactions against Great Britain. He noted: I believe this a moral issue, not a legal one. Moreover, he said that this issue was not discussed at the Vienna meeting since the issue of the use of nuclear weapons by Great Britain must be discussed by the disarmament commission.

Castro Madero explained that the main issue discussed at the conference was the matter submitted last September by the Argentine delegation requesting that the Director of the international organization issue a report on the compatibility of the many safeguard agreements and the statutes. He noted that this report was submitted during the recent meeting and that Argentina criticized it since the Argentine delegation thought it incomplete. He said that, nevertheless, the result of this report was very positive, because it boosts the Argentine position in negotiations for future safeguard agreements to be signed with the organization.

Regarding nuclear undertakings in our country, Castro Madero said that they are going ahead very well. He said that this is because the CNEA budget has been extended until a new one is approved for this year. Castro Madero noted that for the time being the most important undertaking is the Embalse nuclear power plant, which will not undergo tests. It will be officially inaugurated in mid-April after it is connected to the energy system in March.

Castro Madero also noted that Argentina maintains very good relations with those countries with which Argentina has signed contracts, since the supply of equipment has not been interrupted.

CSO: 5100/2043

BRAZIL

NUCLEAR COOPERATION WITH U.S. SUPPORTED

PY072301 Rio de Janeiro O GLOBO in Portuguese 5 Mar 83 p 21

Brasilia -- Dario Gomes, chairman of Nuclebras, yesterday said that Brazil-U.S. cooperation in the field of nuclear energy, which has been proposed by President Ronald Reagan, is bound to reactivate technological and scientific research in Brazil. Dario Gomes said that he does not believe there are U.S. pressures to force Brazil to sign International Atomic Energy Agency safeguards. According to the chairman of Nuclebras, bilateral cooperation will follow the pattern of cooperation accords that Brazil has signed with other nations, a pattern that includes training of technicians and nuclear research.

After meeting with Minister Saraiva Guerreiro yesterday morning and talking with him about the nation's energy needs, Dario Gomes said that "in 4 or 5 years we will begin to feel the problems of an energy shortage in this country." He explained that the reason for this will be the programs of the Mines and Energy Ministry aimed at replacing fuel oil with electric energy in industry. Yet another cause would be the special rates which the ministry will give to industries which are willing to join its program to reduce consumption of imported energy sources. Dario Gomes also said that he is not concerned over the second reloading of Angra 1 because the Brazilian nuclear program has been slowed down. No date has been set for the reloading of the powerplant so far.

CSO: 5100/2044

NUCLEAR ENERGY ACCORD SIGNED WITH CANADA

Cairo THE EGYPTIAN GAZETTE in English 22 Feb 83 p 2

[Text] Egypt and Canada yesterday signed a protocol for technical cooperation for the peaceful use of nuclear energy. The protocol was signed by the Minister of Energy, Mr Maher Abaza and the Canadian Ambassador Mr Robert Eliot.

The protocol provides for the formation of an Egyptian-Canadian committee, of five Egyptian and six Canadian experts to hold meetings every six months to supervise the implementing of the nuclear cooperation agreement signed by the two countries last May, said Mr Ahmed Fahmy Abdul Sattar Chairman of the Nuclear Power Stations Authority.

He also said that the protocol determines the fields in which the two countries will cooperate. These include power generation: industry, agriculture medical sterilisation, data sharing's exchange of experts and joint training courses.

Meanwhile, Mr Maher Abaza yesterday announced that two nuclear power stations will be working before the end of the year and they will be linked to Egypt's unified power network producing an extra 1000 megawatt an hour. The country's energy output is to increase to 10,000 million kilowatts an hour during the next twenty years.

The Minister also said that a project to expand El Mahmoudia power station will soon be carried out to increase its capacity to 400,000 kilowatts an hour. He added that the United States has agreed to grant the Ministry of Energy funds for this project.

Mr Abaza affirmed that power generating nuclear reactors are completely safe. He added that Egypt and France have already signed an agreement for the construction of these reactors at El Dabaa, 150 kilometers west of Alexandria.

As regards the Qattara Depression project, the minister said that feasibility studies have revealed that the project would require \$6,000 million to produce 100 megawatts and that a committee has been formed to make a study of then possible effects the project might have on the environment.-- GSS

ARTICLE URGES INSPECTION OF INDIAN NUCLEAR FACILITIES

BK211210 Delhi INDIAN EXPRESS in English 7 Feb 83 p 6

[Article by Swaminathan S. Aiyar: "Our Nuclear Hypocrisy"]

[Text] Hypocrisy has its uses. Indeed, diplomacy is often about mixing hypocrisy and principle in the right proportion. The trouble begins when hypocrisy begins to be mistaken for principle. This is the problem that now afflicts our nuclear policy. And this is why the Kalpakkam nuclear power station idles for want of heavy water even as Tamil Nadu reels under power cuts of 75 to 100 percent.

We hold that international inspection of our nuclear facilities is a slur on our sovereignty. As a piece of hypocrisy, intended to cloak our possible nuclear arms intentions, this makes excellent sense. As a principle it is nonsense. Over a hundred countries have signed the nuclear nonproliferation treaty [NPT] without feeling it is an insult to their sovereignty. Many of them are as prickly as we are about their independence. We may wag our fingers at hypocrites like the United States who want to inspect other people's facilities without throwing open their own. But there are other countries with advanced nuclear programmes, like Canada, who cannot be accused of double talk. Far from regarding international inspection as an affront, Canada takes pride in demonstrating that it has nothing to hide, and so do many others. We have something to hide, which is why we cannot follow the Canadian example despite our avowed horror of nuclear arms.

Other nations which have refused to sign the NPT include South Africa, Israel, Pakistan, Brazil and Argentina. No matter of high principle binds these countries together. They merely happen to be countries with nuclear arms ambitions. Indeed, this is the only issue on which India finds itself ranged on the side of South Africa and Israel and against the vast majority of non-aligned nations. It would be much too embarrassing for India to announce openly a nuclear arms intention in view of its professed Gandhian values. So it merely reserves the right to exercise what it euphemistically calls "the nuclear option." This is a nice, vegetarian phrase, which cloaks a potential carnivore underneath. It fools nobody abroad, but has the advantage of fooling several people at home. It also permits us to indulge in the old homilies. It is thus a highly worthwhile exercise in hypocrisy.

The U.S. has not been fooled. Determined to prevent nuclear proliferation, the U.S. Congress insisted on full-scope safeguards on nuclear supplies to countries (like India) which did not sign the NPT. This meant that fuel for Tarapur would be supplied only if India threw open all its facilities for inspection, including the top secret ones of the Bhabha Atomic Research Centre (BARC). India refused point blank, as it had not intention to letting foreign inspectors probe into its production of bomb-grade plutonium. The Tarapur problem was subsequently resolved by bringing in France as an alternative supplier. But outrage on the question of inspection was such that the matter ceased to be regarded as a convenient piece of hypocrisy. It is now regarded as a matter of principle, and there lies the rub.

We are now unwilling to accept nuclear supplies from the London Club of suppliers. The club rules do not insist on inspection of all facilities--only the facility to which material is supplied is safeguarded. But the rules include a pursuit clause. If a club member supplies materials for one plant (like Kalpakkam) and byproducts from that plant (like plutonium) are used in a second plant (like the reprocessing unit at BARC or a fast-breeder reactor), then the second plant will be safeguarded too. This the government seems determined to avoid. It did import heavy water from the Soviet Union to charge the second unit of the Rajasthan nuclear power station. But the London Club rules at the time permitted an importer to escape safeguards if it returned the heavy water later. This escape clause has not been deleted, so that India is loth to import heavy water for charging Kalpakkam. India's own heavy water programme is way behind schedule, and even the plants that are working suffer from frequent breakdowns. Hence it is unable to manufacture enough heavy water indigenously for Kalpakkam, which is therefore lying idle though it is mechanically complete. This story is likely to be repeated when the second unit at Kalpakkam and the first at Narora are ready.

There is hypocrisy over safeguards on the part of both the London Club and India. The Club expresses concern that spent fuel from power stations might be reprocessed and used for making bombs. In fact, this is technically not feasible. Bombs require the isotope, plutonium 239 of high purity. But plutonium obtained from power stations is seriously contaminated with another isotope, plutonium 240. This mixture cannot be used with any degree of confidence in a bomb. In theory it may be possible to reduce the plutonium 240 content by further processing. In practice, no country has ever made bombs in this manner--they invariably use special reactors where they can control or eliminate undesirable isotopes of plutonium. Thus the London Club is play-acting in pretending that India might produce bombs from nuclear power stations.

It can be argued that a desperate country could make a highly unreliable bomb using spent fuel from power stations. But India suffers from no desperation. It already has the research reactor Cirus at BARC, which produces up to 31 tonnes of uncontaminated plutonium per year. This was the source of the nuclear device which India exploded at Pokhran in 1974. India is now building a much bigger reactor called 30-S at BARC which will produce up to 100 tonnes of uncontaminated plutonium per year. A bomb requires not more than six to ten tonnes of plutonium. Hence there is not the slightest reason for India to look to power stations for producing plutonium.

Since it already has the raw material and proven ability to explode a device, India is for most practical purposes already a nuclear power. The Western attempt to impose safeguards and prevent India from going nuclear is a pathetic attempt to safeguard the virginity of a lady who was deflowered as long ago as 1974.

But India is equally guilty of play-acting by asserting that safeguards vitiate vital interests. It insists in public that it has no nuclear military intentions, and would be outraged if it was called a nuclear power. And so we have a theatre of the absurd with all the characters making passionate speeches about safeguards which are quite irrelevant to India's nuclear arms ability.

The trouble is that policy-makers have forgotten that we are play-acting, and have begun to believe that safeguards are unacceptable as a matter of principle. This has been disastrous for our nuclear power programme. We have cut ourselves off from all sources of fast-changing technology, and want to go it alone in order to escape safeguards. We are painfully trying to re-invent the wheel in nuclear terms. As a result, every nuclear power station is years behind schedule, and the only indigenous unit commissioned--Rapp II--works at barely 40 percent of capacity. We are still trying to master the technology for 235 MW sets which are completely uneconomic--the usual size abroad ranges from 750 MW to 1,300 MW. Our heavy water programme has been a fiasco, and we will produce barely enough in the foreseeable future to meet our maintenance requirements, with little or none to spare for charging new reactors. We get further and further behind the world's best technology with every year that passes. This does not disturb our science bureaucracy, which is far more concerned with expanding its tentacles than in getting the best value for money. But the country is paying through its nose for this.

In our confusion between purposeful hypocrisy and principle, we have been led down the wrong track. We are acting as though the main purpose of a nuclear power plant is to produce unsafeguarded spent fuel rather than cheap electricity. It would be as senseless to set up a thermal power station mainly to produce fly-ash (which probably has more commercial value than spent nuclear fuel). We need to realise that our nuclear power programme and the "nuclear option" form two quite separate compartments in technical terms, and should be treated as such. It makes sense to avoid safeguards which interfere with our production of bomb-grade material at BARC. It makes no sense to oppose safeguards like the London Club ones for nuclear power plants, whose by-products cannot be used for explosions. If we are serious about nuclear power, we need to get the best equipment, materials and technology. Much of this must come from abroad, safeguards or no safeguards. Nobody thought the country's sovereignty was jeopardised when we agreed to safeguards for Tarapur in the 1963 agreement. Nor is there any need to get agitated on this score about future nuclear power plants.

ISRAEL

NUCLEAR POWER PLANTS TO BE EXPORTED

1st Day of YOMAN HASHAVUT'A in Hebrew 17 Dec 81 p 10

[Article by Ariel Cohen: "By 2000 Israel Will Be Exporting Nuclear Reactors After Building Western Subterranean Reactors, First of Their Kind in the World"]

[Text] In a conversation with YOMAN HASHAVUT'A, the minister of science, Professor Yuval Teller (photograph), disclosed that by 2000 Israel will be exporting self-developed nuclear reactors. This will be done after it will build four or five subterranean nuclear reactors, the first of their kind.

[Question] At which stage is the plan for building the nuclear reactors for the production of energy?

[Answer] We are 10-15 years behind the requirements of the country. In the early sixties, I was scientific director of the Atomic Energy Commission, I proposed the establishment of nuclear reactors for the generation of electricity. But then the Likud was being advised by his friend Sporn, an expert from the United States, who was opposed in principle to nuclear energy. Sporn maintained that all prices would be dropping and it would be a pity for such a poor country as Israel to waste its money on nuclear reactors.

[Question] Were we ever able to purchase a reactor abroad?

[Answer] In 1975 Kissinger proposed that Israel and Egypt buy reactors for the production of energy, but President Carter changed the law and made the sale of reactors conditional upon the signing of an international treaty which subjects them to international inspection. Today no one will sell us a reactor without our having to sign this treaty, and we do not want to do this.

[Question] What kind of program is your research?

[Answer] The minister of energy has already stated that Israel will begin to build its first reactor within 2 years. Professor Teller suggests that the reactors be built underground so that they will not be vulnerable to bombing and that environmentalists and the American Jewish community will be satisfied. He will be the person responsible for the project, and will be able to export it later. The reactor will be a 100 MW reactor, and the first of its kind.

[Question] Will not the building of the reactor in Israel be much more costly than procuring one abroad?

[Answer] Political experience shows that even if they would agree to sell us a reactor, later they are likely to exert pressure on us, such as in the case of the French missile boats. We dare not be dependent on outside sources in such a crucial matter. In regard to its worthwhileness, if we build a series of five reactors by 2000, we will make the project much less expensive. There is also the possibility of procuring information and spare parts abroad after we ourselves build the nuclear heart of the reactor. Then we will not be tied by international restrictions.

It must be remembered that what is sold to others is not sold to us. France and Germany sold reactors to Argentina without these countries having signed the nuclear weapons nonproliferation treaty. They refused to sell to us. Therefore, we must depend upon ourselves. So it would be a pity not to take advantage of our outstanding manpower that is likely to be scattered everywhere if we do not exploit it in Israel.

[Question] Why did you bring Teller to the prime minister?

[Answer] I wanted to give encouragement to Mr Begin so that he would see that there are Americans who are with us in principle and viewpoint.

2430

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BRIEFS

NUCLEAR PROJECT AGREEMENT--An agreement to study construction of a nuclear power plant in Morocco is to be concluded between the Moroccan Office National de l'Electricite (ONE) and the Societe Francaise d'Etudes et de Realisations Nucleaires (SOFRATOME), the Moroccan news agency TAP reported. The terms of the accord were discussed at a recent meeting between Morocco's Energy Minister Moussa Saadi and Sofratome's President, Armand Luxe. The projected studies would include choice of a site for the plant and plans to irrigate coastal areas with water from desalination plants, in addition to training programmes, the agency said. Shortly before President Francois Mitterrand's recent visit to Morocco, King Hassan II asked France to provide Morocco with nuclear power plants. Mr Mitterrand responded by declaring that France had no objections in principle to helping Morocco undertake a nuclear programme (AN-NAHAR ARAB REPORT & MEMO, January 31 and February 7). [Text] [Paris AN-NAHAR ARAB REPORT & MEMO in English No 9, 28 Feb 83 p 11]

CS0: 5100 4605

SOUTH AFRICA

RSA HAS NO INTENTION OF BUILDING NUCLEAR WEAPONS

MB140950 Johannesburg Domestic Service in English 0500 GMT 14 Mar 83

[Station commentary]

[Text] One of the most extraordinary manifestations of the left liberal era in Western politics was the inability of its pacesetters to comprehend the self-evident proposition that a country which is under threat will strengthen its defenses, and one of the surest indicators that that era has had its day is the present acknowledgement of the proposition, even in the highly emotional politics of nuclear weaponry.

In Washington, a congressional committee is again investigating nuclear non-proliferation, and one of its main concerns, as usual, is South Africa's position on that issue. Speaking for the administration, a State Department official has bluntly told the committee that adopting a moralistic posture against apartheid is futile. South Africa's security fears will have to be resolved, says Mr David Dlouhy. It will have to be convinced that it does not need nuclear weapons if it is to be dissuaded from developing them.

That is a statement of the obvious, and Mr Dlouhy found it necessary to make it only because of the manner in which it has been consistently ignored in the past. He pointed out that South Africa's nuclear program had developed to a point where it was too late even to attempt isolation.

Pretoria's stand on nuclear weapons has been stated repeatedly: It has no intention of building them. But Mr Dlouhy might just as well have been speaking about the unprecedented strengthening of the country's conventional defenses in the last two decades. In that period, South Africa has built up a military force that is authoritatively assessed as the superior of any combination of potential aggressors. It has created the 10th largest arms industry in the world. And it has done so as a direct response to threats to its security, not the least of which have been the international campaigns to isolate it in order to weaken its ability to maintain itself against more conventional attacks.

Mr Dlouhy's remarks point not only to the futility of the course that most Western governments espoused so enthusiastically in the past, but to its dangers for regional security and Western stability. Indeed, South Africa has warned over the years that it was a course for which the West would pay most

tearily. The forecast has been borne out. The misguided policies are being scrapped, and today the increasing concern of Western governments is with how the security of nations and regions may be enhanced rather than destroyed by their actions. There, too, the requirements have been spelled out clearly.

In Southern Africa, nations in their own interests will have to learn to live together in respect for one another's sovereignty and national integrity. The security of all collectively depends on the security of each individually. The contribution the West may make lies in two directions: In desisting from making gestures which, while insubstantial, encourage a spirit of irresponsible avoidance of the region's economic, political and military realities, and in strengthening the security of the subcontinent as a whole by effectively countering Soviet encroachment.

Internationally, the opportunist participation in radical isolationist campaigns must end. To the extent that they are designed to weaken South Africa, they are a threat to this country's security and will be met by a strengthening of its defensive resources. That, as Mr Diouhy points out, has been conclusively demonstrated even in nuclear developments. The solution, as obvious as the original proposition, lies in enhanced security--that of South Africa and of Southern Africa--and a willingness by the West to act on its recognition of the obvious.

See: S100/7

BRIT

PELINDABA BLAST DEFE--It was not yet possible to say whether terrorist activities had been responsible for the recent fire at the Pelindaba site of the Atomic Energy Corporation, the Minister of Mineral and Energy Affairs, Mr Pietie du Plessis, said yesterday. Answering a question from Mr John Malcomess (DPP, Port Elizabeth Central), Mr Du Plessis said nobody had been injured during the fire and there had been no danger of exposure to radiation as no atomic material was stored at the site at the time. Because the investigation into the fire had not yet been completed, details of the cause and the estimated costs of repairing the damage were not available. A third part of Mr Malcomess' question was whether terrorist activities were suspected. "No conclusions can be made in this regard yet as the investigation has not been completed," Mr Du Plessis replied. [Text from Johannesburg TWP (171222 in English) 16 Mar 83 p 4]

NUCLEAR SAFETY REPORT CLAIMS RECORD FOR FINNISH PLANTS GOOD

001117 21 001500N SACOMAT In Finnish 20 Jan 53 p 10

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Fuel Has Remained Compact

According to Radiation Safety Chief Bjorn Wahlstrom at the Lovisa Nuclear Power Plant, the main reason for the exceptionally small radioactive emissions at the Finnish plants is that the fuel has remained compact.

The fact that very little radioactivity is emitted into the water is also partially a result of the compactness of the fuel and also partially a result of the fact that the purification systems for the process water are much larger than is generally the case, states Wahlstrom.

10175

CSO: 5110/2582

FRANCE

SODIUM WATER REACTION SHUTS DOWN PHENIX

Paris NUCLELEC in French 21 Feb 83 p 10,683

[Text] On the evening of 16 February, the Phenix reactor had to be shut down again, after a leak in the third steam generator.

According to a statement released by the CEA [Atomic Energy Commission], this leak occurred at 2015 and was followed by a sodium-water reaction. It is identical to those which took place in steam generators no 2 and no 1 of the plant on 29 April and 16 December 1982, respectively.

This incident, which did not actually come as a surprise, seems to have been caused essentially by wear of the parts.

The CEA stated that modules for replacement steam generators have been ordered and are now being delivered. Deliveries will continue throughout the first half of 1983.

About the latest incident, the CEA said that "the arrangements made (shutdown of the reactor, followed by draining of the water-steam section of the steam generator) were applied within a few seconds, bringing the sodium-water reaction to an end."

The steam circuit was then filled with nitrogen.

"The safety membranes of the generator affected remained intact. This shows that the pressure rise caused by the chemical reaction was slight. The new instructions and technical arrangements made after the incidents of 29 April and 16 December 1982 made it possible to bring the sodium-water reaction under control very quickly, thus minimizing the consequences of the incident to the entire facility."

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CSO: 5100/2568

FRANCE

SUPERPHENIX BREEDER REACTOR COMPLETION SCHEDULE DETAILED

Paris NUCLELEC in French 21 Feb 83 pp 10,683-10,684

[Text] Speaking at the "European Energy Meetings," held in Paris from 14 to 17 February, Boris Saitcevsky, president of NERSA [expansion unknown], discussed the status of work on the Superphenix. He said that the civil engineering was "practically finished" and that "the overall completion of the plant" may be estimated at 80 percent.

"The experience with building the Superphenix," pointed out Mr Saitcevsky, who is also deputy director of equipment at EDF [French Electric Company], "is conclusive in technical terms. No fundamental difficulties have appeared."

Mr Saitcevsky indicated that deliveries of elements for the boiler unit are almost completed. The plutonium fuel assemblies are 70 percent manufactured. The major non-nuclear elements, such as the heat exchangers and steam generators, are in place and are now being connected, while the machine room, which houses the turbines, is also well advanced.

The reactor unit has been given a "false load" for cold testing. These tests are in progress in a certain number of circuits, and two-thirds of the operating staff is already at the site, where 2,300 people are now working, to be given intensive training.

The schedule is now as follows:

- a. Sodium loading will be done in the middle of the year;
- b. The core will be fueled at the end of 1983;
- c. Connection to the power system is scheduled for mid-1984.

NERSA is composed of EDF (51 percent), ENEL [National Electric Power Agency of Italy] (33 percent), and SBK, an association of German, Belgian, Dutch, and British electricity companies (with 16 percent).

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CSO: 5100/2568

SWITZERLAND

PROGRESS IN RADIOACTIVE WASTE STORAGE

Geneva JOURNAL DE GENEVE in French 11 Feb 83 p 12

[Article by Anne-Marie Ley]

[Text] The maximum depth reached to date by the CEDRA [National Radioactive Waste Storage Cooperative] in the subsoil of the Bottstein site in Aargau, as part of its program of test drillings to resolve the acute problem of safe and final storage of the highly radioactive wastes produced by nuclear power plants is 712.5 meters.

The drilling operation at Bottstein, the first in Switzerland, started to function in October 1982. It has now drilled through 385 meters of the crystalline base of the Jura tablelands, extracting granite cores with a diameter of about 10 centimeters. These cores are carefully studied at the site by a team of geologists, and then, after being properly dated, numbered, and photographed, they are sent to the University of Bern for additional studies. This program is part of the CEDRA's mandate to conduct seismic, geological, and hydrological research by test drillings in order to find a suitable site for placing highly radioactive wastes in a safe, long-term storage facility. (The CEDRA's membership consists of six nuclear power plant operators and the Confederation). In order to show how this work is going, CEDRA recently invited the press to visit the Bottstein and Riniken sites in the Aargau canton and the Weiach site in the canton of Zurich.

Twelve Sites Selected

According to the head of the CEDRA, Rudolf Rometsch, its mandate goes back to the time when the Federal Council, defending the federal decision of 6 October 1973, extending the 1959 federal law on atomic energy, a decision which had been attacked in a referendum, required that the nuclear power plant operators conduct a program, with the target date set at 31 December 1985,

to ensure the final storage of the nuclear wastes produced by the power plants. Mr Rometsch said that the Federal Council simply sent a letter to the plant operators stating its requirements. The target date at the end of 1985 is not included in the federal decision which was finally approved in a popular vote on 20 May 1979, he pointed out. It is hardly necessary to be a great prophet to say that this date will not be met, given the present circumstances, he added.

In 1983, of the 12 sites selected by the CEDRA in communes of the cantons of Solothurn, Aargau, Zurich, and Schaffhausen, at the end of the often difficult talks with the communes involved, the CEDRA can now say that it has authorizations to conduct test drillings from the communes, the cantons, and the Federal Council, for eight sites. However, Mr Rometsch reported that Siblingen (SH), Niedergosgen and Hagendorf (SO) have resolutely opposed this plan, while for Steinmaur (ZH), which is to replace the Bachs site in the same canton, the federal authorization has not yet been issued.

Four Drillings

This year two drillings are underway, one at Bottstein in Aargau and the other at Weiach (ZH). Two others are planned: one at Riniken (AG) for which the preparatory work has been completed, and the other at Schafisheim (AG). But in less than 2 years, the CEDRA is supposed to provide the necessary assurances about the possibility of storing highly radioactive wastes. Mr Rometsch says that in the beginning, in 1979, the CEDRA members were fully convinced that they would have no problems in supplying such proof.

Today, as Mr Rometsch frankly admits, it will hardly be possible to obtain conclusions on more than four drillings between now and the end of 1985, given the amount of measurement data required of the CEDRA by the federal authorities. Gambling on the future, the CEDRA head is taking the risk of saying that the results of the four drillings now in progress will provide enough data to prepare a convincing report. He said that the exploration site selected is safe from seismic shocks, and that the granite samples taken to date from Bottstein will offer evidence of the impermeability of the crystalline base. But in the opinion of the CEDRA head, the Federal Council will still feel that the conclusions based on four drillsites are not enough, and it will most likely grant an extension.

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